

Authorization verification method and devices suited  
therefor

5

Technical field

The present invention relates to an authorization verification method and to devices suited therefor. The invention relates particularly to an authorization verification method in which authorization data are reproduced using a user interface of an electronic reproduction device, and to a system for authorization verification which comprises an electronic reproduction device having a user interface for reproducing the authorization data, and to a computer program product having computer program code means for controlling one or more processors in the reproduction device.

Prior art

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The use of electronic reproduction devices for reproducing authorization data using a user interface in the form of a display has the advantage that no one-off paper tickets need to be produced and distributed. Electronic reproduction devices for reproducing authorization data have the advantage that they can be used multiple times and for obtaining various services or for accessing various systems or buildings. In addition, electronic reproduction devices can be provided with communication modules, so that authorization data can be loaded dynamically into the reproduction devices via a telecommunication network.

Patent application DE 100 34 275 describes an authorization verification method in which access authorizations are transmitted via a mobile radio network to a mobile device, where they are shown on the display such that they can be (machine-)read by a barcode reader.

Patent application US 2003/0054801 describes an authorization verification method in which access authorizations are transmitted via a mobile radio network to a mobile device, where they are shown on a display in graphical form by a user-independent function and can be viewed by the eyes of a verifier. In addition, the verifier can check the authenticity of the graphically shown authorization data, in line with US 2003/0054801, by using a communication terminal to transmit a query to an authorization center. This involves requesting that the authorization data associated with the relevant user or with the relevant mobile device be transmitted from the authorization center to the verifier's communication terminal. To prevent unauthorized copies of the graphically shown authorization data, however, US 2003/0054801 also requires additional machine-readable visual features.

WO 02/48926 describes an authorization verification method in which the authorization verification involves user-specific transaction parameters being requested from a control center. The transaction parameters or a status code which is dependent thereon is/are transmitted from the control center to a verifier's terminal. In line with WO 02/48926, the status code is transmitted to a terminal belonging to the user and is displayed visibly to the verifier, with the status code being regularly renewed by the control center in order to increase security. The verifier's terminal generates the status code on the basis of an identical algorithm, so that both codes are changing continually and in sync but have the same value.

It is an object of the present invention to propose a new authorization verification method and also devices suited therefor which do not have the drawbacks of the

prior art. In particular, the aim is to propose a new authorization verification method and devices suited therefor which allow authorization data to be reproduced using a user interface of an electronic 5 reproduction device without the check on the authenticity of the authorization data reproduced requiring queries to an authorization center and without the authorization data having to be reproduced in machine-readable form in order to prevent 10 unauthorized copies.

The present invention achieves these aims particularly by means of the elements of the independent claims. Further advantageous embodiments can also be found in 15 the dependent claims and in the description.

The authorization data are reproduced using a user interface of a first electronic reproduction device.

20 The present invention achieves the abovementioned aims particularly by virtue of reproduction attributes being altered during the reproduction of the authorization data using the user interface of the first reproduction device. The reproduction attributes particularly 25 comprise attributes which can be picked up by the human sensory organs, for example visual attributes of displayable objects, such as color, orientation, purpose of a picture section, position or font, or audio attributes of audibly reproducible objects, such 30 as volume, pitch or tone length. The reproduction of the authorization data using the user interface of the first reproduction device is compared with the reproduction of reference data using a user interface of a second electronic reproduction device. 35 Authorization is granted when there is a match between the reproduction of the authorization data using the user interface of the first reproduction device and the reproduction of the reference data using the user interface of the second reproduction device, and

alterations in the reproduction attributes are essentially time-synchronized. The match between the reproduction of the authorization data and the reproduction of the reference data requires at least 5 one match in the reproduction attributes. The reproduction of the authorization data by the first reproduction device and the reproduction of the reference data by the second reproduction device are picked up by the senses of a verifier, for example, and 10 the verifier can grant the authorization, depending on application, if both reproduction devices reproduce data whose contents do not match using matching reproduction attributes and using time-synchronized changes in the matching reproduction attributes, or if 15 both reproduction devices reproduce matching contents simultaneously and using synchronized alterations. That is to say that authorization can be granted, for example, if the two reproduction devices show simultaneously matching visual contents using the same 20 visual attributes on their displays and/or reproduce simultaneously matching audible contents using the same audio attributes on their electroacoustic transducers. By way of example, the authorization data and the 25 reference data comprise service descriptors in written form, with the authorization for the relevant service being grantable only if the service descriptor is reproduced by the two reproduction devices at the same time using the same font. If the service relates to a journey by rail, for example, then a match between the 30 reproduction attributes changing in time sync is typically sufficient for the service descriptor. On the first reproduction device, belonging to a passenger, the service descriptor comprises the exact route, the class and the date, for example, whereas the service 35 descriptor on the verifier's reproduction device merely comprises a train or route number, for example. By way of example, the authorization data comprise user identification data which are accepted as authentic only if they are reproduced using reproduction

attributes which match reproduction attributes which are provided for this purpose and which are reproduced at the relevant time with the reference data. By way of example, a photograph of the user can be granted as 5 user identification if it is displayed in the display at the position which matches the position which is simultaneously displayed for it in the display with the reproduced reference data. In the latter example too, it is sufficient to have a match between the 10 reproduction attributes changing in time sync, namely the position at which the user identification data are displayed in the display, and no content match is required, because, by way of example, the system contains no available or accessible user identification 15 data for display on the verifier's reproduction device. Since the reproduction of the authorization data is continually changing as a result of the dynamic change in the reproduction attributes, unauthorized copying of picture data or audio contents for the purpose of 20 forging an authorization is practically impossible. In addition, there is no need for queries to an authorization center, since the authorization data and the reference data are reproduced at the same time by the two reproduction devices. If the authorization data 25 relate to services, systems or buildings which are simultaneously used by a plurality of users, the authorization data can likewise be reproduced in sync using the user interfaces of the users' electronic reproduction devices, which means that a verifier does 30 not need to have a separate second electronic reproduction device, but rather can compare the reproductions of the authorization data using the user interfaces of the users' electronic reproduction devices with one another. By way of example, this 35 allows the authorization of train passengers to be checked by virtue of the verifier verifying whether the passengers' reproduction devices are reproducing mutually matching contents at the same time and using synchronized alterations.

Preferably, the authorization data are stored in a data store of the first reproduction device, the reference data are stored in a data store of the second reproduction device, the reproduction of the authorization data using the user interface of the first reproduction device is based on a first synchronization signal, and the reproduction of the reference data using the user interface of the second reproduction device is based on a second synchronization signal. Storing the authorization data and the reference data in the reproduction devices allows authorizations to be transmitted individually to reproduction devices of the users without the need for an association between authorization data and users to be stored and managed in an authorization center. Storing the authorization data in a reproduction device also allows authorization or entrance tickets to be produced which are valid more than once and/or over longer periods of time.

In one variant embodiment, the first synchronization signal is produced in the first reproduction device and the second synchronization signal is produced in the second reproduction device. This variant embodiment allows maximum independence of the reproduction devices. The reproduction of the authorization data and the reproduction of the reference data are synchronized on the basis of signaling signals which are produced independently of one another in the reproduction devices.

In one variant embodiment, the first synchronization signal is produced in the first reproduction device on the basis of a signal which has been received in the first reproduction device from the second reproduction device, or the second synchronization signal is conversely produced in the second reproduction device on the basis of a signal which has been received in the

second reproduction device from the first reproduction device. This variant embodiment brings about closer coupling of the reproduction devices, preferably via a device interface. Secondly, more precise synchronization between the reproduction devices can be achieved, since the synchronization of the reproduction of the authorization data and of the reproduction of the reference data is based on a synchronization signal which is produced in one of the reproduction devices.

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In one variant embodiment, the first synchronization signal and the second synchronization signal are produced in the first reproduction device and in the second reproduction device, respectively, on the basis of a signal received from a computer-based authorization center. This variant embodiment has the advantage that the reproduction devices need to have neither time determination means for producing the synchronization signals nor device interfaces for synchronizing the synchronization signals. Together with the signal for synchronizing the synchronization signals, the authorization center can also transmit reproduction attributes and/or details regarding the change in the reproduction attributes to the reproduction devices.

In one variant embodiment, the authorization data are stored in a data store of a computer-based authorization center, and the authorization data and the reference data are transmitted from the authorization center essentially in time sync via a telecommunication network to the first reproduction device and to the second reproduction device, respectively. This variant embodiment allows authorization data to be transmitted in "push mode" dynamically to the reproduction devices, which makes it even more difficult to copy authorization data without authorization.

Preferably, the alteration of reproduction attributes in the reproduction of the authorization data and in the reproduction of the reference data is made on the basis of relevant data in the authorization data and in the reference data, respectively. That is to say that the reproduction attributes are changed during the reproduction of the authorization data and of the reference data on the basis of rule data, instruction data, algorithms and/or attribute change parameters which are contained in the authorization data and reference data, respectively. This allows a dynamic change in the reproduction attributes independently of an authorization center.

In one variant embodiment, the alteration of reproduction attributes in the reproduction of the authorization data and in the reproduction of the reference data is made on the basis of relevant data which are transmitted from an authorization center via a telecommunication network to the first reproduction device and to the second reproduction device, respectively. The dynamic transmission of details for altering the reproduction attributes from the authorization center to the reproduction devices makes it impossible to foresee the alterations in the reproduction attributes.

In one variant embodiment, the authorization data are transmitted from an authorization center via a telecommunication network to the first reproduction device, and the alteration of reproduction attributes in the reproduction of the authorization data is made on the basis of reproduction control data which are transmitted from a reproduction control center via the telecommunication network to the first reproduction device. The reference data are transmitted from the reproduction control center via the telecommunication network to the second reproduction device, and the alteration of reproduction attributes in the

reproduction of the reference data is made on the basis of data which are transmitted from the reproduction control center via the telecommunication network to the second reproduction device. The use of separate sources and transmission paths firstly for the information which is to be verified, particularly for the authorization data, and secondly for the reproduction control data allows various operators and service providers, respectively, to be defined which are responsible for providing the information which is to be verified (authorization data) or for controlling the reproduction of the information which is to be verified. That is to say that it is possible to produce a system and a method for verifying information, particularly an authorization verification method and a system for the authorization verification, in which the service provider controlling the reproduction of the information which is to be verified on the reproduction devices has no insight into the information which is to be verified, and in which the service provider providing the information which is to be verified (authorization data) has no insight into the control of the reproduction of the information which is to be verified.

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In one variant embodiment, the first reproduction device is in the form of a mobile communication terminal. Mobile communication terminals are particularly suitable for receiving authorization data, details regarding the alteration in the reproduction attributes and/or synchronization signals dynamically from an authorization center via a mobile radio network. The first reproduction device may also be in the form of a chip card which is provided with a display, for example.

Brief description of the drawings

An embodiment of the present invention is described below using an example. The example of the embodiment 5 is illustrated by the following appended figures:

Figure 1 shows a block diagram which schematically shows reproduction devices which are provided with user interfaces and are set up to produce a synchronization 10 signal.

Figure 2 shows a block diagram which schematically shows reproduction devices which are provided with user interfaces and are connected to an authorization center 15 which is set up to produce a synchronization signal.

Figure 3 shows a block diagram which schematically shows reproduction devices which are provided with user interfaces, where one of the reproduction devices is 20 set up to produce a synchronization signal and to transmit it to the other reproduction device.

Figure 4 shows a block diagram which schematically shows reproduction devices which are provided with user 25 interfaces and are connected to an authorization center which is set up for synchronized transmission of authorized data to the reproduction devices.

Figure 5a shows a time axis along which reference 30 data reproduced using the user interface of a reproduction device are shown at various times.

Figure 5b shows a time axis along which authorization data reproduced using the user interface 35 of a reproduction device are shown at various times.

Figure 6 shows a picture with a plurality of picture segments and also shows a data record with a

picture object identifier and a sequence of picture segment identifiers.

Figure 7 shows a block diagram which schematically 5 shows reproduction devices which are provided with user interfaces and which are connected both to an authorization center and to a reproduction control center.

10 Modes of implementing the invention

In figures 1, 2, 3, 4 and 7, the reference symbol 3 relates to a computer-based authorization center which comprises one or more computers and can be connected to 15 the reproduction devices 1, 2 via the telecommunication network 8.

The telecommunication network 8 preferably comprises a mobile radio network, for example a GSM (Global System 20 for Mobile Communication), a UMTS network (Universal Mobile Telephone System) or a WLAN (Wireless Local Area Network). The telecommunication network 8 may also comprise a landline network, for example the Internet.

25 The reproduction devices 1, 2 are preferably in the form of mobile communication terminals, for example mobile radio telephones, PDA (Personal Data Assistant) computers or laptop computers. The reproduction devices 1, 2 may also be in the form of fixed communication 30 terminals or in the form of chip cards, with the latter being connected to a communication terminal, for example to a mobile communication terminal, in order to connect to the authorization center 3.

35 As figures 1, 2 and 3 show, the reproduction device 1 comprises a data store 13 for storing authorization data, and the reproduction device 2 comprises a data store 23 for storing reference data. As figures 1, 2 and 3 schematically show by means of the dashed arrow

31, the authorization data are transmitted from the authorization center 3 via the telecommunication network 8 to the reproduction device 1, where they are stored in the data store 13. Correspondingly, as 5 figures 1, 2 and 3 schematically show by means of the dashed arrow 32, the reference data are transmitted from the authorization center 3 via the telecommunication network 8 to the reproduction device 2, where they are stored in the data store 23. The 10 authorization data and the reference data can also be stored without using the telecommunication network 8, by means of direct programming in the data stores 13 and 23, respectively, for example at a sales point or with a manufacturer of mobile data storage media.

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Figure 4 shows an alternative variant embodiment in which the authorization data and the reference data, respectively, as shown schematically by means of the dashed arrow 35, are transmitted from the authorization 20 center 3 in sync in push mode via the telecommunication network 8 to the reproduction devices 1 and 2, respectively, for reproduction.

Figure 7 shows a further alternative variant embodiment, which is subsequently called the service provider separation variant. In figure 7, the reference symbol 3' relates to a computer-based reproduction control center and the reference symbol 3" relates to a computer-based synchronization center, which each 25 comprise one or more computers and can be connected to the reproduction devices 1, 2 via the telecommunication network 8. In the service provider separation variant, the provision of authorization data (information which 30 is to be verified) and the provision of reference data and also optionally the production of a synchronization 35 signal are performed by separate service providers and separate computer-based units, respectively. As figure 7 schematically shows by means of the dashed arrow 37, the authorization data are transmitted from

the authorization center 3 together with a verification identifier via the telecommunication network 8 to the reproduction device 1, where they are stored in the data store 13. By contrast, the reference data are 5 transmitted from the reproduction control center 3' via the telecommunication network 8 to the reproduction device 2, where they are stored in the data store 23, as schematically shown by means of the dashed arrow 38.

10 As figures 1, 2, 3 and 4 schematically show, the reproduction devices 1, 2 each comprise a user interface 11 and 21, respectively, for reproducing authorization data and reference data, respectively. The user interfaces 11, 21 preferably comprise a 15 display 11a, 21a for displaying visual objects such as pictures, graphics, video and text. The user interfaces 11, 21 also comprise an electroacoustic transducer 11b, 21b (loudspeaker, headphones) for reproducing audio objects such as voice, sound patterns, noises or music. 20 The user interfaces 11 and 21, respectively, can also comprise further modules for reproducing authorization data and reference data, respectively, which can be picked up by a user's sensory organs, for example a vibration module or an actuator module for producing 25 codes which can be picked up by the user in tactile fashion (for example in Braille).

The reproduction device 1 additionally comprises a reproduction module 12 for reproducing authorization 30 data stored in a data store 13 using the user interface 11 or for reproducing authorization data which have been received from the authorization center 3 in push mode using the user interface 11. The reproduction device 2 comprises an appropriate reproduction module 35 22 for reproducing reference data stored in the data store 23 using the user interface 21 or for reproducing reference data which have been received from the authorization center 3 in push mode using the user interface 21. The authorization data and reference

data, respectively, are reproduced by the reproduction modules 12 and 22, respectively, preferably on the basis of a synchronization signal, as is described in more detail later.

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The authorization data and the reference data comprise data objects such as digitized picture, video, text, numerical, graphical and/or audio information. In addition, the authorization data and the reference data 10 preferably comprise details regarding the alteration of reproduction attributes. The details regarding the alteration of reproduction attributes can also be transmitted from the authorization center 3, for example together with the synchronization signal, to 15 the reproduction devices 1, 2 in the variant embodiment shown in figure 2. The reproduction attributes determine the reproduction of the authorization data and the reproduction of the reference data, respectively. The reproduction attributes particularly 20 comprise visual attributes of displayable objects, such as color, orientation, picture section identification, position or font, or audio attributes of audibly reproducible objects, such as volume, pitch or tone length. The details regarding the alteration of the 25 reproduction attributes comprise attribute change instructions, attribute change rules and/or attribute change algorithms. Depending on form, the details regarding the alteration of the reproduction attributes also comprise attribute change parameters such as 30 values of reproduction attributes and/or object identifiers.

In the aforementioned service provider separation variant, which is shown in figure 7, the authorization 35 data comprise no details regarding the alteration of reproduction attributes, but rather merely information which is to be verified, for example details regarding the determination of a service, such as a service descriptor, or details about personal information for a

user, such as the solvency of a user. As shown schematically by means of the arrow 36, the authorization center 3 transmits a data record with the aforementioned verification identifier and with details 5 about the desired level of security to the reproduction control center 3', for example via the telecommunication network 8. In the reproduction control center 3', stored data objects, such as digitized picture, video, text, numerical, graphical 10 and/or audio information, and also details regarding the alteration of reproduction attributes, for example changing reproduction attributes, are determined on the basis of the received level of security. The data objects determined, the details regarding the 15 alteration of reproduction attributes and also the verification identifier are transmitted from the reproduction control center 3' as reproduction control data via the telecommunication network 8 to the reproduction device 1, as shown schematically by the dashed arrow 39. With the reference data, the data 20 objects determined and also the details regarding the alteration of reproduction attributes are also transmitted from the reproduction control center 3' via the telecommunication network 8 to the reproduction 25 device 2, as shown schematically by the dashed arrow 38. The reference data also comprise a reference text, which, by way of example, comprises details regarding the identification of the reproduction control center 3' and of the operator of the reproduction control center 3', respectively. The reproduction devices 1, 2 are addressed by the reproduction control center 3' on the basis of the verification identifier. The address 30 information for the reproduction devices 1, 2 is held in the verification identifier, for example, or can be requested using the verification identifier in a 35 registration database.

The use of synchronization signals or the transmission of authorization data and reference data in push mode

achieves synchronization of the reproduction of the authorization data by the reproduction module 12 and of the reproduction of the reference data by the reproduction module 22. During the synchronization 5 based on synchronization signals, the authorization data and the reference data are reproduced by the reproduction modules 12 and 22, respectively, on the basis of the associated details regarding the alteration in the reproduction attributes. Depending on 10 form, the synchronization signals start automatically running attribute change algorithms or they initiate the execution of an attribute change instruction or attribute change rule using associated values of reproduction attributes, as illustrated later using an 15 example. The execution of an attribute change algorithm or the execution of a plurality of attribute change instructions or attribute change rules dynamically alters the reproduction of the authorization data and the reproduction of the reference data. If there is a 20 match between the reproduction of the authorization data using the user interface 11 of the reproduction device 1 and the reproduction of the reference data using the user interface 21 of the reproduction device 2, and the alterations in the reproduction attributes 25 are also essentially in time sync, the user of the reproduction device 1 can be granted authorization by a verifier who is using the reproduction device 2. The match between the reproduction of the authorization data using the user interface 11 of the reproduction device 1 and the reproduction of the reference data using the user interface 21 of the reproduction device 2 30 requires at least one match in the reproduction attributes.

35 The synchronization signals can be periodic or aperiodic signals. The synchronization signals are dependent on the authorization data and on the reference data, respectively, for example.

In the variant embodiment shown in figure 1, the reproduction devices 1, 2 each comprise a synchronization module 14 and 24, respectively, for producing a synchronization signal which is used as a basis for reproducing the authorization data and the reference data, respectively. The synchronization modules 14, 24 comprise a time determination module, for example, which determines the current time or a particular period of time on the basis of a clock generator and/or on the basis of received time details.

In the variant embodiment shown in figure 3, just one of the reproduction devices 1, 2 comprises a synchronization module 14 for producing the synchronization signal. In addition, the reproduction devices 1, 2 shown in figure 3 comprise a device interface 15 and 25, respectively, however, in order to transmit the synchronization signal produced to the relevant other reproduction device (arrow 26), for example an infrared interface or a radio interface such as "Bluetooth".

In the variant embodiment shown in figure 2, the authorization center 3 comprises a synchronization module 30 for producing and transmitting a synchronization signal (arrow 33) to the reproduction devices 1, 2.

In the variant embodiment shown in figure 7, the synchronization module 30 is arranged in the synchronization center 3", and the synchronization signal is transmitted from the synchronization center 3" to the reproduction devices 1, 2 in line with arrow 33'.

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By way of example, the authorization data and reference data, respectively comprise a picture object 6 comprising a plurality of picture segments S1 to S16, as shown schematically in figure 6. The authorization

data and reference data, respectively, also comprise a data record 7 shown in figure 6 with details regarding the alteration of reproduction attributes. The data record 7 comprises a picture object identifier 71 for 5 identifying the picture object 6 and comprises a randomly-generated sequence 72 of picture segment identifiers for the picture segments S1 to S16. The sequence of picture segment identifiers can also be produced dynamically by an attribute change algorithm. 10 In the service provider separation variant shown in figure 7, the picture object 6 and the data record 7 are transmitted from the reproduction control center 3' to the reproduction device 1 in the reproduction control data.

15 Synchronized by synchronization signals, the reproduction modules 12, 22 determine the picture object 6 on the basis of the picture object identifier 71 and select from the picture segments S1 to S16 the 20 one determined by the first picture segment identifier in the sequence 72 for reproduction. The picture segment is determined by the reproduction modules 12, 22 by executing appropriate attribute change algorithms, attribute change instructions or attribute 25 change rules which are part of the software modules in the reproduction modules 12, 22 or which are held in the details regarding the alteration of reproduction attributes. In line with the relevant attribute change algorithm or the relevant attribute change rules, the 30 reproduction modules 12, 22 select the next picture segment for reproduction, which is determined by the next picture segment identifier in the sequence 72, upon the next signaling signal or after a predefined period of time. The picture segment identifiers can 35 also have associated time details in the sequence 72, however, which determine which of the picture segments S1 to S16 is chosen at a particular time or after a particular period of time by the reproduction modules 12, 22 for reproduction.

The authorization data and reference data, respectively, also comprise a service descriptor, for example the name of a service, of a system or of a 5 building in the form of text data. The service descriptor has associated details regarding the alterations of reproduction attributes, which each determine the position and the font of the service descriptor for reproduction at a time determined by 10 synchronization signals. In the service provider separation variant shown in figure 7, the reference data comprise the aforementioned reference text instead of the service descriptor or instead of the information which is to be verified.

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The authorization data and reference data, respectively, optionally also comprise a user identification field, that is to say details regarding the determination of a display segment in which a user 20 identifier can be displayed. The user identification field has associated details regarding the alteration of reproduction attributes, which each determine the position of the user identification field for reproducing the user identifier at a time determined by 25 synchronization signals.

The sections below describe the method flow for authorization verification with reference to figures 5a and 5b. During authorization verification, the 30 reproduction modules 12, 22 are activated for reproducing the authorization data and reference data, respectively. Selection of the relevant authorization data and reference data, respectively, for the relevant service or for access to the relevant system or 35 building is not discussed in more detail here. Neither is a more detailed discussion provided here for the option of partly cancelling authorization data, for example as in the case of multitrip tickets. Figure 5a shows the picture contents which are displayed at times

T1, T2 and T3 on the display 21a of the reproduction device 2. Figure 5b shows the picture contents which are displayed at the same times T1, T2 and T3 on the display 11a of the reproduction device 1.

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In figure 5a, the reference symbol 4 denotes the picture content which is displayed at time T1 on the display 21a of the reproduction device 2. The reproduced picture content 4 is based on the reproduction of the reference data which are stored in the data store 23 or are received in the reproduction device 2 via the telecommunication network 8 in push mode. The reproduced picture content 4 is determined firstly by the details regarding the alteration of the reproduction attributes, which are held in the reference data or are received in the reproduction device 2 via the telecommunication network 8, and secondly by the synchronization signal which is produced in the reproduction device 2 or which is received in the reproduction device 2 via the telecommunication network 8 or the device interface 25. The picture content 4 comprises a picture object, e.g. a flower, which is determined as described above with reference to figure 6, for example. Besides the picture object of the flower, the picture content 4 comprises a user identification field 41 for reproducing a user identifier, the geometrical position of the user identification field 41 being determined by an appropriate reproduction attribute which is active at time T1. In addition, the picture content 4 comprises a service descriptor 42 whose geometrical position and whose font are determined by appropriate reproduction attributes which are active at time T1.

35 In figure 5b, the reference symbol 5 denotes the picture content which is displayed at time T1 on the display 11a of the reproduction device 1. The reproduced picture content 5 is based on the reproduction of the authorization data which are stored

in the data store 13 or are received in the reproduction device 1 via the telecommunication network 8 in push mode. The reproduced picture content 5 is determined firstly by the details regarding the 5 alteration of the reproduction attributes, which are held in the authorization data or are received in the reproduction device 1 via the telecommunication network 8, and secondly by the synchronization signal which is produced in the reproduction device 1 or which is 10 received in the reproduction device 1 via the telecommunication network 8 or the device interface 15. In the service provider separation variant shown in figure 7, the authorization data from the authorization center 3 and the reproduction control data from the 15 reproduction control center 3' are associated with one another in the reproduction device 1 on the basis of the verification identifier. If the reproduced authorization data are intended to result in grantable authorization, the picture content 5 comprises the same 20 picture object, i.e. the same flower, as the picture content 4. In addition, the picture content 5 needs to comprise a user identification field 51 whose geometrical position corresponds to that of the user identification field 41. Finally, depending on 25 application, the picture content 5 needs to comprise the same service descriptor 52 as the service descriptor 42 or a service descriptor 52 whose content does not match and the aforementioned reference text, respectively, but the reproduction attributes of the 30 service descriptor 52, namely the geometrical position and font, need to correspond to the reproduction attributes of the service descriptor 42 and of the reference text, respectively. As figure 5a shows, the user identification field 51 shows a user identifier, 35 for example a picture of the user or his name. The user identifier can be permanently stored in the reproduction device 1, for example, or can be part of the authorization data or can be based on a subscriber

identifier stored in a SIM card (Subscriber Identity Module).

5 To grant an authorization, however, the verifier compares the reproduction of the reference data on the display 21a of his reproduction device 2 with the reproduction of the authorization data on the display 11a of the reproduction device 1 belonging to the user during further times T2 and T3, which are one or more 10 seconds apart, for example. As can be seen from figures 5a and 5b, the respective reproduction attributes change in the picture contents 4' and 5' at time T2 and in the picture contents 4" and 5" at time T3. A respective different picture segment of the 15 picture object 6 is reproduced, the position and the font of the service descriptor 42 and of the service descriptor 52 and of the reference text, respectively, change, and the position of the user identification fields 41 and 51, respectively, moves.

20 At this juncture, it should be stated that, in one variant embodiment, authorization can also be granted if the reproduction of the reference data on the display 21a of the reproduction device 2 belonging to 25 the verifier and the reproduction of the authorization data on the display 11a of the reproduction device 1 belonging to the user are effected with a slight time shift, for example if reproduced picture sequences are not precisely in sync. For this, it is useful, for 30 example, if picture contents change only in part, so that even with imperfect synchronization it is possible to compare at least those picture contents which do not change during a sequence transition.

35 The method described is preferably used for authorization verification or for general verification of information in cases in which the reproduction devices 1, 2 of the service user and of the verifier can be compared at the location of the service, for

example on public transport means or during access verification at sports events, in the theatre or at the cinema. The method described may alternatively be used when the reproduction devices 1, 2 of the service user 5 and of the verifier are remote from one another. In the latter case, the service user describes the reproduction of the authorization data to the verifier using a communication link, and the verifier compares the description with the reproduction of the reference 10 data. When reproduction devices 1, 2 are remote from one another, authorization data which are reproduced audibly and are transmitted via a communication link, for example a telephone link, to the verifier for comparison with the audible reproduction of the 15 reference data are also suitable, in particular.